John Kerl

PROFESSIONAL SUMMARY

Full-software-development-life-cycle, polyglottal practitioner with a passion for force-multiplicative tool-building, conscientious service ownership/operations, transparent metrics-enabled services, open source, APIs/UIs, self-explanatory code, and expository/technical writing and presentation.

SKILLS

Python, Ruby, PHP, JavaScript, JS/React/Flow/GraphQL, Java, C/C++, Go, Mercurial, Git.

EXPERIENCE

FACEBOOK, SOFTWARE ENGINEER, WASHINGTON DC, 2015-2020

- Rebooted the ThreatExchange franchise for cross-company integrity-signal sharing. Full-stack, full-life-cycle software development and documentation for REST API, polyglottal OSS SDKs, and hosted React UI.
- Bottom-line impact was reduction of harmful content being shared on the Internet.
- Co-maintained relationships with industry partners, and developed API/SDK/UI in concert with their needs.
- Mentored newer members of the team. Evolved from learning JS/React to mastery and mentoring others, cross-organizationally.
- Most visible work products: ThreatExchange OSS SDKs https://github.com/facebook/ThreatExchange/tree/master/hashing and ThreatExchange UI https://developers.facebook.com/docs/threat-exchange/ui.
- Previous project: co-led reboot/rebirth of FB-internal photo/video similarity-detection infrastructure. Led backend rewrite and ownability/metrics for photo/video matching services, co-owned middleware rewrite, co-owned evolution of React UI. Bottom-line impact was organizational scalability of tooling to enable teams to reduce harmful content being shared on Facebook.
- Technologies: PHP, C++, Tupperware, Thrift, JS/React/GraphQL, Java, Ruby, Python, Mercurial; FB-internal graph DB and service-metrics/dashboarding frameworks.

AMAZON WEB SERVICES, SOFTWARE DEVELOPMENT ENGINEER, HERNDON VA, 2013-2015

- Full-lifecycle design, development, and operations of cross-functional, reliability-engineered systems for cloud-scale data management, in the context of network-bandwidth metering for Amazon Web Services. Key projects included global router-

400 GALLOWAY STREET NE #560S * WASHINGTON DC 20011 * 202-794-0806

bandwidth metrics service, global metering-funnel aggregation services, and global Flow Logs backend service.

- This was key for AWS revenue-generation as well as customer trust.
- Technologies: Java, Ruby, S3, DynamoDB, IAM; Amazon-internal service-metrics/dashboarding frameworks.

TWO SIGMA INVESTMENTS, QUANTITATIVE SOFTWARE DEVELOPER, NEW YORK NY, 2010-2013

- Architected and implemented Linux/Java/Groovy/Ruby framework for generation of terascale datasets; improved efficiency and reliability by an order of magnitude.
- Impact was enabling market researchers to develop models with trust and agility, as well as growing the relationship between researchers and engineering.
- Created scalable metric-acquisition/management/visualization tools for compute/disk farms, which enabled decision-making to improve job-scheduling and user experience while avoiding hardware outlays.
- Drove process improvement through full software-development life cycle: ongoing feedback loop with customers, design, documentation, leading agile/scrum development, package management, version control, unit-testing, and regression testing.
- Technologies: Java, Groovy, Ruby, bash; Linux.

UNIVERSITY OF ARIZONA DEPARTMENT OF MATHEMATICS, PHD CANDIDATE, TUCSON AZ, 2005-2010

- Utilized methods including Markov chain Monte Carlo, high-performance computing, statistics, and finite-size scaling to determine the critical temperature of phase transitions for a simplified model of the Bose gas. For more information, please see http://johnkerl.org/John_Kerl_research_statement.pdf.
- Maintained an active speaking/presentation schedule: http://johnkerl.org/index-archive.html *Lecture Notes*.
- Employment: research funding for the above; five semesters teaching college algebra, trigonometry, and calculus.
- Technologies: C, Python, Matlab; Linux.

LOCKHEED MARTIN, SENIOR EMBEDDED SOFTWARE ENGINEER, GOODYEAR AZ, 2004-2007

- Simulation and verification of FPGA-accelerated digital-signal-processing solutions.

- Design, implementation, documentation, regression testing, and performance analysis of custom logic for vector arithmetic, matrix multiplication, matrix inversion, FFTs, and Householder transformations.
- This enabled electrical engineers to design, implement, and ship image-processing circuitry to customers quickly and confidently.
- Technologies: C/C+ +, Unix shells, custom assembler, Perl; Solaris/Linux.

AVNET, APPLICATIONS ENGINEER, PHOENIX AZ, 2000-2004

- Embedded systems programming (PowerPC, ARM, Xilinx FPGAs). Circuit-board verification, device drivers, operating-system ports (Linux, uClinux, uCOS, VxWorks). From-scratch implementation of networking protocols: TCP/IP, ARP, ICMP, UDP, HTTP, BOOTP.
- Result was providing customers with clear, solid, reliable reference designs to reduce time to market for their own products. An additional result was writing lucid, straightforward C to be used and understood by non-software engineers.
- Technologies: C, multiple assembly languages, Perl; NT/Linux/embedded OSes.

LOCKHEED MARTIN, SOFTWARE ENGINEER, GOODYEAR AZ, 1998-2000

- Implementation and testing of ASIC-accelerated digital signal processing algorithms in a supercomputing environment, with focus on FFTs and digital differential analyzers.
- Technologies: C/C++, Unix shells, custom ASIC microcode; Solaris/ IRIX.

MOTOROLA EMTEK HEALTHCARE DIVISION, SOFTWARE ENGINEER, TEMPE AZ, 1994-1998

- Maintenance of database, transaction-processing, and socket-layer subsystems of a distributed medical information system.
- Technologies: C, Unix shells, Perl; Solaris/AIX.

OPEN SOURCE

https://github.com/johnkerl/miller

EDUCATION

University of Arizona, Tucson AZ — PhD Mathematics 2010

Arizona State University, Tempe AZ — MA Mathematics 2005

University of Arizona, Tucson AZ — BA Mathematics & Physics 1993